

SUBJECT: Action Plan for the Geographical Delineation of Fish Tissue and Sediment PCB Contamination, Guest River Watershed, Wise County, VA

TO: Bob Burnley, Director

FROM: Larry Lawson, Director Division of Water Program Coordination

DATE: February 6, 2004

COPIES: M. Overstreet, D. Sizemore, F. Kaurish, A. Newman, A. Pollock, V. Thomson, F. Campbell, J. Gregory, R. Browder, A. Barron, G. Darkwah

A: Objective:

The intent of this project is to determine the geographical extent and magnitude of the contamination of fish by polychlorinated biphenyls (PCBs) in the Guest River watershed in Wise county, VA. The Virginia Department of Health (VDH) in a letter dated March 24, 2003 requested this study based on Virginia Department of Environmental Quality (DEQ) fish tissue data from the 2002 monitoring season. The suggested sampling will encompass the entire mainstem of the Guest River, from its headwaters near Lipps to the confluence with the Clinch River near Bangor. The river stretch is approximately 30 miles. The focus of this project is to provide the VDH additional data so that they have the necessary information to determine the magnitude and extent of PCB contamination of fish and to decide if there is the need for a fish consumption advisory. Sediment samples collected may help bracket the boundary limits of PCB contamination within the study area.

B: Justification:

First, the concentration of PCBs in a composite sample of edible fillets of carp tissues collected in 2002 by the DEQ exceeded the VDH level of concern of 600 parts per billion (ppb) or higher for PCBs, a specific toxic contaminant. The carp sample from the Guest River near the Rt. 72 bridge crossing downstream of the town of Coeburn in Wise County had PCB levels of 1603 ppb. The results of previous sampling at this station in 1997 indicated levels of PCBs in river chub at 67 ppb and stoneroller species at 117 ppb.

Second, the concentrations of PCBs in the 2002 carp sample and 1997 river chub and stoneroller samples from this Guest River site, assessed using EPA risk assessment techniques for PCBs as carcinogens, exceeded the DEQ risk-based Screening Value (SV) of 54 ppb. Although PCBs are only suspected carcinogens, the level in this carp tissue also exceeded the SV calculated as non-carcinogens of 220 ppb. The SVs are from Table 6a of the Water Quality Assessment Guidance Manual for Y2002 305(b) Water Quality Report and 303(d) Impaired Waters List (DEQ, July 15, 2002).

This same segment was listed impaired for fish consumption use in the DEQ 2002 303(d) Impaired waters list (Segment ID VAS-P11R_GUE02A98) due to PCBs, Mercury and Arsenic in tissues of multiple species at Guest River mile 6.45 in 1997.

Finally, as a result of the above carp sample concentration exceeding VDH level of concern of 600 ppb for PCBs, the VDH recommended “additional sampling of carp for this station and other nearby stations in order to fully evaluate the extent of contamination and its potential impact on human health”. This suggests a potential threat to human health upon which the Director may determine the need for a source assessment.

Therefore, this project is consistent with the Department's Toxic Contamination Source Assessment Policy (January, 2000) which describes when and how to conduct source assessments for toxic contaminants using the Virginia Environmental Emergency Response Fund (VEERF). The circumstances above represent triggers listed in that document, which indicates the need for toxic contaminants source assessment.

C: Project Structure:

The DEQ's Central Office Fish Tissue and Sediment Monitoring Program and Southwest Regional Office Staff collected fish tissue and sediment samples at six sites within the Guest River drainage in the summer of 2003 (see Table 1 and Figure 1). Additional sediment samples were collected at sites recommended by SWRO staff. The Virginia Institute of Marine Sciences (VIMS) will perform biota and sediment sample analyses once VEERF funding has been approved. Funds for additional sampling may be requested in the future, pending the 2003 sample results.

Table 1: Follow up Guest River sites sampled during August, 2003

Sample Date	DEQ rivermile	Stream name/location	Latitude	Longitude
Fish and Sediment sites				
8-12-2003	6BGUE000.23	Guest River near Bangor	N36 52.738	W82 24.329
8-11-2003	6BGUE006.50	Guest River near Rt. 72 bridge, downstream Coeburn	N36 55.775	W82 27.384
8-12-2003	6BGUE009.33	Guest River near Rt. 658, upstream Coeburn	N36 56.167	W82 28.467
8-13-2003	6BGUE014.49	Guest River near Tacoma	N36 56.069	W82 31.970
8-13-2003	6BGUE020.37	Guest River near Hawthorne	N36 56.434	W82 35.865
8-13-2003	6BGUE029.14	Guest River near Lipps	N36 59.991	W82 38.602
Sediment only sites				
8-12-2003	6BGUE010.87	Guest River near Drag Strip	N36 56.072	W82 29.891
8-14-2003	6BLST000.06	Lost Creek near Norton Plaza	N36 56.191	W82 37.171
8-14-2003	6BTMS001.64	Toms Creek behind Ball Park	N36 57.408	W82 28.199
8-14-2003	6BLTF000.23	Little Toms Creek	N36 56.607	W82 27.902

D: Safety Requirements:

General safety requirements will be followed as stated in the DEQ's Quality Assurance/Quality Control Project Plan for the Fish Tissue and Sediment Monitoring Program (August, 1998).

E: QA/QC for Field Sampling and Laboratory Analyses:

The DEQ's central office staff in standards and biological programs are responsible for all field sampling covered by this plan with all field quality control samples collected in accordance with the Agency's Quality Assurance/Quality Control Project Plan For The Fish Tissue and Sediment Monitoring Program (August, 1998). Split and replicate samples will be analyzed at a frequency of 10%. All samples collected under this plan will be analyzed by VIMS.

F: Project Scope:

The projected study schedule follows:

April 2003 – Draft Project Plan incorporated into the 2003 DEQ Fish Tissue and Sediment Monitoring Plan.

April 2003 – Concurrence on final draft of Project Plan by Central Office Staff, Regional Offices, and VDH.

August 2003 – Collect Fish and Sediment samples (Approximately One-Week Sampling Event)

January 2004 – Approval of Proposed Project Plan for VEERF funding by Agency Director.

January - February 2004 – Deliver samples to VIMS

June 2004 – Receive sample results and report to VDH

June – December 2004 – Evaluate results. Identify contaminated stations sampled in 2003. Consultation with VDH. Post data on the DEQ website. Request VEERF funding and conduct further sampling as deemed necessary and dictated by findings.

G: Responsibility for Specific Study Plan Tasks:

Project Team:

Jean Gregory – WQS&BP manager fish tissue and sediment collection. Facilitates communication and coordination among VDH, and DEQ Central Office and Regional Office Staff.

Alex Barron – WQS&BP manager fish tissue and sediment collection, data analysis, and report preparation.

Rick Browder – Sample collection planning and logistics, field collections, data analysis, data management, and report preparation.

Gabriel Darkwah – WQS&BP fish tissue and sediment lab liaison, data analysis, and data management, QA/QC, website production, and report preparation.

Dr. Rob Hale – VIMS Lab Director, data QA/QC, and primary contact for samples submitted to VIMS.

Bill Hayden – DEQ Public Affairs Director. Central Office point of contact for web-targeted information. Central Office contact for reporters and press releases.

H: Costs of Implementation:

The Virginia Legislature has authorized use of the Virginia Environmental Emergency Response Fund (VEERF) for conducting the assessments described here in accordance with DEQ's Toxics Contamination Source Assessment Policy (VEERF Policy Statement 2-2001, effective 9/11/2000). Costs budgeted include sampling and analysis for samples (see Table 2).

Total Cost for sampling August, 2003 – December, 2004: \$ 28,500.00

- **Fish Tissue and Sediment Analysis**

WQS&BP estimates \$ 21,540.00 will be needed to analyze 30 fish tissue samples at \$510 and 12 sediment samples at \$520 including QA/QC samples in order to conduct this study as requested by VDH.

Additionally, \$ 5,420.00 will be needed to analyze a subset of the samples for heavy metals to address the occurrence of Mercury and Arsenic in fish in the watershed. 20 fish tissue samples at \$145 and 12 sediments at \$210 including QA/QC samples.

- **Incidentals**

A commitment of \$1540.00 for equipment, lodging, meals, and miscellaneous incidental travel costs for 4 member field crew and approximately four day sampling event.

Any change in the scope of work to include special contractual services or expanded sampling will require additional resources.

Table 2: Itemized Budget for Guest River VEERF Project

Sample Analysis: Fish Tissue Halogenated Organics, 30 samples @ \$510 each.	\$ 15,300
Sample Analysis: Sediment Halogenated Organics, 12 samples @ \$520 each.	\$ 6,240
Sample Analysis: Fish Tissue Heavy Metals, 20 samples @ \$145 each.	\$ 2,900
Sample Analysis: Sediment Heavy Metals, 12 samples @ \$210 each.	\$ 2,520
Travel Costs: hotel, meals, equipment, and incidentals for 4 day sampling event with 4 field crew members.	\$ 1,540
Total	\$ 28,500

I: Products:

1. Maps with the following information
 - Monitoring locations and contaminant concentrations for fish tissue and sediments

2. Reports

- Data to VDH
- DEQ website and data to DEQ assessment staff
- Plans and recommendations for further investigation

DEQ Director Approval: _____ Date: _____

Figure 1. Guest River Watershed PCB follow up 2003 (1"=2 mi)

